By email (deltaplancomment@deltacouncil.ca.gov)
and hardcopy

July 1, 2011
Philip Isenberg, Chair
Delta Stewardship Council
980 Ninth Street, Suite 1500
Sacramento, CA 95814

RE: DELTA PLAN FOURTH DRAFT

Dear Chairman Isenberg,

This letter is submitted as the comments of the Bay Institute regarding the June 13, 2011, fourth staff draft Delta Plan. The drafting effort continues to show great improvement and a much higher level of specificity with each new version, and overall the findings and policies in this most recent draft are based on sound management principles and the best available science. However, the Plan continues to be unacceptably vague regarding a number of foundational issues associated with the desired outcomes for the co-equal goals of reliability and restoration. In summary, we recommend that the Plan should be revised to include:

1. More specific, measurable and space- and time-bound performance measures for water supply reliability and ecosystem restoration, and a more specific definition of water supply reliability.

2. Additional strategies to reduce reliance on the Delta and increase system capacity, including land retirement and transient (seasonal) surface storage.

3. Acknowledgement that the inability to recreate a given historical ecosystem does not mean that species and habitats cannot be restored to levels significantly greater than recent conditions.

The following comments are organized by chapter, focusing on Chapters 4 and 5 (water supply reliability and Delta ecosystem restoration).

Chapter 4: A More Reliable Water Supply for California

Reliability and performance measures.

As we have stated previously, in order to be useful the Plan needs to include a much more specific definition of "reliability" and more quantitative, time-bound specifications of reliability metrics. The latter could be expressed in the form of ranges or references to the current demand and water availability under drought scenarios. While the Plan contains much more specific and improved language regarding policies to promote greater reliability, the current discussion of, and specification of metrics for, reliability in the Plan remains overly vague, and open to interpretations that could directly conflict with the co-equal goal of restoring the Delta ecosystem and the state policy of reducing export water supply reliance on the Delta. A Plan that does not distinguish between a one percent and a one hundred percent change in reliability or reduced reliance and does not establish a timeline for attainment of reliability and reduced reliance targets is not likely to incentivize necessary changes in water management or facilitate meaningful oversight during Plan implementation and Council permitting activities. Furthermore, a Plan that does not clearly acknowledge that "reliability" cannot be achieved given current export demands and the existing water supply system is in danger of perpetuating the current situation where maximizing Delta exports drives policy while improvements in statewide water management strategies do not actually relieve pressure on the Delta.

Instead, the Plan should provide a more precise definition of water supply reliability that relates to the decreased reliance of exporting areas on Delta supplies, the increased predictability of the remaining Delta export supplies under different hydrological conditions, and the reduced risk of disruption of the remaining Delta export supplies due to systemic failure. Proceeding from this definition, the Plan should then describe the preferred strategy and schedule for "making the water more reliable", that is, a strategy that aggressively promotes a much greater level of local water supply self-reliance in areas currently importing water from the Delta and that reduces the Delta export volume to a level significantly lower than it is today, i.e., the level that can be sustainably delivered given the realities of hydrology and Delta ecology. Finally, the Plan should then articulate a set of performance metrics that describe the desired changes in reliability and reduced reliance on the Delta.

Reduce reliance on the Delta through improved regional water self-reliance

1. The Plan should include additional strategies for improving regional self-reliance, such as permanent land retirement and transient surface storage. The Bureau of Reclamation's most recent NEPA analysis of the western San Joaquin Valley's drainage problem identified the potential retirement of 200,000 to 300,000 acres of drainage-impaired land from irrigation as the most environmentally friendly and economically efficient alternative. Analyses by the U.S. Fish and Wildlife Service and other sources suggest that an even higher level of land retirement may be required to solve the drainage problem. Much of the drainage-impaired land will go out of production in the future if existing practices are continued. A well-designed land retirement program is not only necessary to protect local and downstream water quality and preferable to simply waiting for this land to become unfarmable, but would obviously also help reduce the region's heavy reliance on Delta export supplies. Another example is transient storage of flood flows in existing and/or restored floodplains, particularly in the Sacramento and Tulare Basins. Transient storage would provide a number of benefits for reliability, restoration and other state goals, including groundwater recharge, local yield enhancement, potential water transfers, improved flood control, and restoration of floodplain wetlands (see below for more on this topic).

2. The Plan may significantly under-represent actual and potential savings from increased regional self-reliance. Actual water use has decreased since 2005 in most areas of the state. For example, in the San Francisco Bay Area, water use since 2005 has dropped more than 10% due to a combination of increasing efficiency and other factors (and has dropped more than 20% compared to 1986 despite a 20% increase in population). Fig 4-5 should be updated with data through 2010 to reflect these changes. Potential savings may also be greater than indicated. For instance, brackish desalination covers a variety of activities, including agricultural drainage desalination, groundwater desalination, and oil-field-water desalination. The sum of all these "desalinations" adds up to a much larger volume than the DWR estimate in Figure 4-4. More critically, the state's estimates of the potential for agricultural water use efficiency are extremely low, especially if a complete accounting of gross water savings and reuse potential is factored in. The Plan needs to call for a much more aggressive target to be set by an executive order from the Governor or as a public trust or water rights order by the State Water Resources Control Board. The use of agricultural efficiency improvements should be afforded high priority because they represent a huge untapped source of supply and enhance local self-sufficiency without any need to transport water or engage in complex multi-agency agreements. The Pacific Institute has reported that with serious water efficiency improvements, water use in California "in 2030 could

be 20 percent below 2000 levels, even with a growing population and a healthy economy" (which corresponds to a decline of 8.5 MAF; 2005, p.2). Their earlier report (2003) included a conservative estimate of one-third of urban water use could be conserved cost-effectively without any new technological developments.

3. The Plan should address barriers to and incentives for the expanded use of water recycling. Achieving cost-effective water recycling in the near future will depend in part on more aggressive funding, education and regulatory efforts by the state and regional water managers to increase the use of recycled water for groundwater recharge. Water recycling may continue to be relatively expensive and fall short of statewide and regional goals as long recycled water is not used much more extensively for groundwater recharge, as is done in some areas of Southern California (these areas, and their projects, should be called out in the Plan as examples of success in recycled water use). The Plan should promote statewide policies to eliminate barriers to cost-effective and sustainable groundwater management where they exist, including barriers that prevent the recharge of appropriately treated reclaimed water in groundwater basins. To this end, the Plan should call for statewide guidelines to be adopted to manage aquifers that will encourage efficient and sustainable projects, eliminate unsustainable projects, and improve coordination between federal, state and local permitting agencies.

4. Figure 4-2 (water supplies pie chart) may contain an error. What is termed "recycled water" in the figure would appear to actually represent surface water reuse. This usage of the term is inconsistent with the text, and is likely misleading, given the more commonly accepted definition of the term recycled water (i.e., highly-treated wastewater, which contributes far less than 17% of the state's water supply).

5. The Plan should more precisely characterize, and differentiate between, those urban users who are entirely supported with Delta water (exports and watershed diversions; perhaps 10 million people) in the different regions, and those who rely on Delta water for some portion of their water supply (30 million). This characterization and differentiation is important for the accurate quantification of the driver and outcome performance measures (pp. 76-77).

<u>Expanded statewide storage and improved conveyance</u>

1. Expanding the system's storage capacity should not exclusively focus on construction of traditional new surface storage facilities but also include use of transient flood plain storage in Tulare Lake Basin (both to store flood waters and provide adjunct storage to San Luis Reservoir), Buena Vista Lake Basin, and other areas, in conjunction with improvements to the

existing storage system. Restoring the Delta ecosystem by providing a more natural Delta hydrograph (per Chapter 5) means that diversions from the Delta and its watershed will need to be decreased in all but the wettest years and all but the wettest periods of the other years. Diversions in these less sensitive wet periods will have to be more efficiently managed for water supply yield. Local self-sufficiency in the Delta export areas can also be increased if the wet period runoff opportunities can be developed in a manner that does not degrade the local environment but instead supports restoration and expansion of floodplains and flood basins. Given the expected decrease in snowpack and increase in flood flows from global warming, seasonal floodplain and flood basin storage in lowland areas is best suited to exploit the opportunities presented by this "flashier" runoff. Of course, exploiting transient storage opportunities in order to increase the yield from wet periods and decrease the yield at other times will require a more integrated and coordinated use of the existing surface storage and conveyance systems with an improved groundwater and flood management system and a strong commitment to protecting the environmental values of floodplain wetlands and peak flows. The combination of enhanced conjunctive use and groundwater storage, coordinated reservoir reoperation and expanded reservoir outlets, and greater floodplain area and floodway capacity, can help make transient storage a significant contributor to increased water supply and help the state better manage floods and reduce vulnerability to extreme events. In addition, watershed management and land use controls in both undeveloped and urban watersheds to promote detention and infiltration can also increase the effective capture of flood runoff. The Plan should be clear, however, that increased storage capacity in whatever form is intended to decrease overall reliance on the Delta rather than facilitate increasing overall diversions of Delta waters to storage, in line with maintaining a net water balance for the Delta in which offstream diversions decrease and ecosystem flows increase over time.

2. Sustainable groundwater management is obviously at the heart of a successful water supply reliability strategy. Groundwater basin storage (including underutilized storage in the Central Valley and Delta export urban areas) will become the new carryover or dry year storage of choice, as new surface reservoir development is prohibitively expensive and environmentally more problematic. In wet years, seasonal surface storage that temporarily holds runoff when existing reservoirs are full, demand is low and conveyance and recharge capacity is limited can be used to regulate deliveries to groundwater basins, existing reservoirs and end users. New seasonal storage opportunities that provide water supply, flood attenuation and environmental benefits exist in existing and expanded acreage in the flood plains and the natural flood basins of the Sacramento and San Joaquin Rivers and the Tulare and Buena Vista Lake bottoms. Modifying existing local connectors can be effective in integrating existing storage and new

seasonal storage with areas of expanded groundwater storage. The Department of Water Resources estimates that improved groundwater management could provide up to 2 million acre-feet of additional supply annually. The average cost in a recent round of applications received by DWR for conjunctive use projects was $110 per acre- foot, well below any estimates of surface storage development. It is important to note, however, that groundwater overdraft problems in the San Joaquin Valley cannot be solved exclusively by improving capture of flood runoff. The San Joaquin and Tulare Basins have become severely depleted largely as a result of unsustainable demand for irrigation deliveries, and therefore sustainable groundwater management in these areas must involve demand reduction and water use efficiency components, including land retirement, source control, water supply and electric power pricing reforms, and pump taxes and/or other economic incentives, in order to truly solve the overdraft problem.

3. It is not clear why WR R6 through 8 are recommendations rather than policies, given the central importance of moving toward comprehensive groundwater management as a critical element of achieving the Plan's water supply reliability goal.

<u>Additional comments on performance measures</u>

1. While the outcome measures do reference specific targets for urban water conservation, recycling, and stormwater use, they are deficient in two important ways. First, like all the performance measures they omit the temporal aspect of performance by omitting both the amount of progress desired toward attainment and the schedule for doing so. More importantly, for the most part they are really driver measures. The true outcome measures are a) the improvement by exporting areas in achieving a specific definition of regional self-reliance, and b) the degree to which these areas have specifically and measurably reduced their reliance on the Delta. It is quite possible for some areas to implement major water management programs to conserve water and/or increase alternative supplies without ever actually reducing their net reliance on exports from the Delta.

2. Numeric targets for agricultural water conservation are the biggest gap in the Plan's reliability-related measures. Agricultural water use accounts for the lion's share of both overall water use and of Delta exports and upstream diversions. The Plan should call for at least a 10% reduction in overall water use by agricultural users in the next 10 years.

3. In addition to overall targets for urban water conservation and water recycling, there is more than enough information to adopt a set of more specific measures to attain these targets. And

although many users of Delta water are implementing efficiency and recycling measures, the full potential is far from realized. To insure that those measures are fully implemented, quantifiable performance targets should be adopted for the different sectors of water use and the Plan should call for their incorporation into all relevant permits, licenses, and other enforcement mechanisms. For example, indoor residential use with current technology should be about 40 gpcd and a target close to this amount should be called out in the Plan and could be included in diversion permits or grants. Outdoor use could be tied to reference water budgets or to the percentage of landscaping or irrigated acreage that implement efficient practices. Recycling targets can be tied to the percentage of the effluent recycled or the amount of potable water replaced.

Chapter 5: Restore the Delta Ecosystem

Performance measures

While the general intent of the performance measures in Chapter 5 is laudable, this section suffers from the same lack of specificity that characterizes the Plan's performance measures in general. A subset of targets for species and ecosystem processes is described in detail in Attachment 1 of our May 6, 2011, letter to you commenting on the 3rd draft of the Plan, and we believe these offer a firm scientific foundation for outcome performance measures. Below, we offer additional recommendations to modify the existing measures and add new ones in order to render them more specific and more space- and time-bound. These measures address the need for specificity in defining abundance targets, eliminating barriers to migration, and expanding spatial distribution.

New performance measures

The Planshould be revised to include the following new performance measures (suggested language is shown in italics):

1. Outcome performance measure: *Reproducing (in the short-term) and viable (in the long term) populations of spring-run Chinook salmon, green and white sturgeon, and steelhead are restored to the San Joaquin River and its tributaries. In the short term (10 years), achieve successful adult inmigration and juvenile outmigration for each of these species.*

2. Driver performance measure: *The availability of floodplain spawning and rearing habitats outside of the Sacramento River Basin is increased in order to improve spatial distribution of spawning splittail, rearing fall run Chinook salmon, and other species.*

Metrics: inundation >45 days of San Joaquin floodplain inundation in above normal or wet hydrology; inundation >30 days in below normal years; frequency of years in which inundation >30 days occurs (all year types) in the lower San Joaquin valley.

3. Driver performance measure: *Research and/or pilot-scale restoration projects are developed and initiated to reduce or limit the range and abundance of selected, harmful, non-native species. These projects may include:*

- *trial of habitat restoration design techniques that limit colonization of restored habitats by harmful non-native species,*
- *short-duration manipulation of Delta water quality parameters to favor native species over non-native species, and*
- *Spatially targeted programs directed at permanent removal of non-native invasives.*

Any pilot project satisfying this performance measure will have a clear adaptive management plans, including specific measurable and time bound objectives relevant to the goal of improving outcomes and providing lessons for the development of large-scale restoration projects. Metrics: acres restored, by habitat type, duration (sustainability of) restoration, cost relative to relevant status-quo, and lessons learned."

4. Driver performance measure: *At least one barrier-free migration path for adult Chinook salmon, steelhead, green sturgeon and white sturgeon is provided through the Yolo Bypass by ___[date].*

5. Administrative Performance Measure: *Actions potentially affecting re-introduction of and/or re-establishment of spawning and rearing habitats for native anadromous fishes as called for by NMFS or CDFG restoration plans clearly demonstrate that adverse impacts to the opportunity for successful re-introduction of winter-run and spring run Chinook salmon, steelhead, and sturgeon, have been fully avoided or minimized.*

6. Administrative Performance Measure: *The responsible federal and state fish and wildlife agencies publish by ___ [date] final restoration plans for all listed species that live in or use the Delta, including restoration targets for abundance, spatial distribution, stressor reduction. and other ecological values that can serve as the basis for future performance measures.*

<u>Modifications to existing performance measures</u>

1. Outcome performance measure for salmonid doubling (p. 99): Inclusion of the state and federal salmonid doubling goal as an outcome performance measure is an excellent starting point, but it is limited in three ways. First, the Plan should also set a date for accomplishing the objectives specified by the AFRP (e.g., within 10 years). Second, the outcome measure should target not just salmonids, but also other native anadromous fish species (per the CVPIA's anadromous fish doubling mandate), specifically green and white sturgeon. Third, because the metrics from the AFRP and SWRCB on doubling of natural production from the 1967-1991 baseline do not apply to restoration of anadromous fish species (other than fall-run Chinook) to the San Joaquin River – an important component of restoring adequate spatial distribution – the Plan should include an administrative measure requiring the state and federal fish and wildlife agencies to include appropriate San Joaquin restoration numbers for these anadromous species. (The Plan should also include outcome measures for other viability attributes of migratory anadromous fish and for all viability attributes of pelagic fish species; for a detailed discussion and recommendations, see Attachment 1 to our May 6 , 2011, letter.)

2. Driver performance measure for natural hydrograph (p. 98): As with the other measures, this is not described to a useful level of specificity. The Plan should be revised to read:
Metrics: Progress shall be measured during the period prior to implementation of new SWRCB flow requirements for the Delta and Central Valley streams in the following ways:

a) In every year, the percentage of unimpaired winter-spring flow that becomes actual Delta inflow (from the Sacramento, Mokelumne, and San Joaquin Rivers) and actual Delta outflow shall be greater than the water-year type-specific average for the period ___-2010. (i.e. establish an historical average for "wet" years, "below normal" years, "dry" years, etc.)

b) In every year, the number of days in which average daily Old and Middle River flows are <-5000 cfs, shall be less than the water-year type-specific average for the period ___-2010. (i.e. establish an historical average for "wet" years, "below normal" years, "dry" years, etc.).

c) In every year, the variance between the daily unimpaired Delta outflow and actual delta outflow during the winter-spring period will be less than the average variance (in all year types) for the period ___ -2010

3. Driver performance measure for pilot habitat restoration projects (p. 98): More emphasis should be placed on the importance of evaluating projects "by habitat type". In other words, the "habitat" to be restored should be described based on its biophysical attributes (attributes that are specifically linked to species' requirements) such that simply breaching a levee does not count as "restoration" for all imaginable species.

4. Driver performance measure for habitat restoration progress (pp. 98-9): The Plan should be as specific as possible about the beneficial functions of connectivity that are being targeted and about the hazards of connectivity that should be avoided, and then specify performance measures for each of those (see below); and should establish measures reflecting the diversity of habitat types and amount of connectivity between habitats rather than rely exclusively on acreage of habitat.

5. Driver performance measure for protection of existing habitat (p. 99): This measure should simply be expressed as a zero-loss policy regarding habitat for natives and a zero gain policy for non-native invasives. Also, the Plan should not aim for a "stable trend" if the current direction of change is down; increasing/decreasing the trend is about the *rate* of change, not the direction of change. Suggested modification: "*Native species habitat (acres) should increase or suffer no-net loss over the next decade."*

6. Driver performance measure for connectivity (pp. 98-9): This measure should be revised to specify : a) progress will occur *"…along all historic major migratory routes…."*; and b) the metrics should include the number of corridors to be restored.

General comments on Chapter 5

The discussion of landscape ecology, restoring the natural hydrograph, and habitat restoration is vastly improved from previous drafts. We offer the following comments to help sharpen the text and eliminate potential misunderstandings.

1. It is true that we cannot completely recreate the historical ecosystem of any baseline period. However, the Plan should explicitly acknowledge that restoration actually offers the possibility to restore species to levels greater than those seen in the recent past. Notably, because much damage to the Delta ecosystem had already occurred more than 50 years ago, it may be possible to restore some species to greater abundance and distribution than we have witnessed in the last 50 years. In particular, the potential to restore Sacramento splittail and spring-run Chinook (historically, the most abundant of the Central Valley Chinook runs) are great examples of how the Delta of the future might look more abundant and productive than the Delta of the past 50 years. Similarly, most of our data records for most of the pelagic species begin in 1967, coincident with the completion of major components of the SWP and long after other large-scale alterations to the system, so these numbers and distributions are expected to be somewhat less than the system harbored historically given that flows had already been significantly modified and habitats destroyed before 1967. The Delta Reform Act defines "restoration" as *"...the*

application of ecological principles to restore a degraded or fragmented ecosystem and return it to a condition in which its biological and structural components achieve a close approximation of its natural potential, taking into consideration the physical changes that have occurred in the past and the future impact of climate change and sea level rise" (Water Code section 85066)." Because data from the early period of long-term sampling (1950s for some programs, post-1967 for others, post-1980 for yet others) are actually a poor approximation of the system's "natural potential" (because of the degradation noted above), the historical baseline is as valid to form the floor of desired conditions/performance measures as to represent a cap on those desired conditions/performance measures. In any case, these data are the best or only available approximation of the system's "natural potential" so reference to these past conditions is completely justified as a starting point (though perhaps not as an ending point).

2. The Plan's emphasis on corridors and connectivity is laudable. The nature of corridors and connectivity is complex, however, and it is important to be specific about what kind of connectivity is desirable, and the conditions under which it is not. There are at least two types of corridors: (a) those that allow migratory species to travel between the habitats necessary to complete different life stages and (b) those that allow inter-population or inter-habitat exchange. The first type (migratory corridors) is essential, and the Plan is right to focus on them (though the Plan should be specific about increasing the number of different corridors and the number of habitats which these corridors connect, rather than just the mileage along any one corridor).The second type of corridor is important in terrestrial ecology as it is believed that these corridors will help combat inbreeding and loss of genetic diversity (especially in birds and mammals). However, freshwater and estuarine aquatic systems tend to have evolved in isolation. This is why they are more prone to invasion. Some degree of isolation limits the impact of invasive competitors, predators, and diseases. If we want to encourage corridors between "populations" of Delta smelt, splittail, etc. we should also be aware that we may be creating corridors for the expansion of *Egeria* and for increasing homogeneity among fall run Chinook salmon and steelhead populations. Rather than simply implying that whatever increases connectivity is a corridor and de facto good, the Plan should be more specific about specific habitat types and areas that should be connected in order to create specific benefits for particular species

Thank you for the opportunity to comment on the latest draft of the Delta Plan. We look forward to working with the Council to develop and adopt a Delta Plan that is a successful catalyst for the major changes in resource management necessary to achieve the co-equal goals.

Sincerely,

Gary Bobker
Program Director